

Ivan J. Machat  
Tel# (602) 742-5355  
Fax# (602) 734-3899

40/728,543

Examiner's Notes

- (S (single or mono) (10g) (crystal?))
- (S (superalloy#)
- (S (high? (ba) power or high?) (8a) (energ?))
- (S (preheat?) (8a) (melt#))
- (S (solid#))
- S (filler#)

112PP2 Rej:

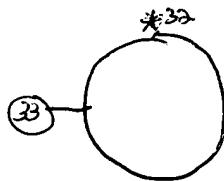
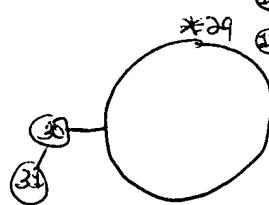
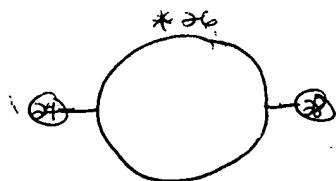
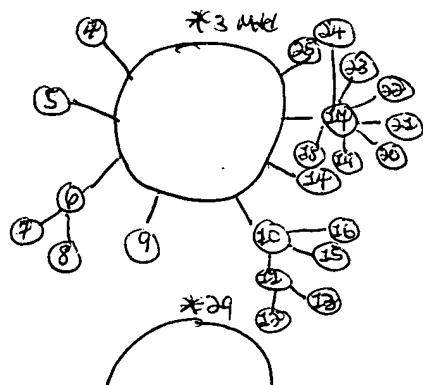
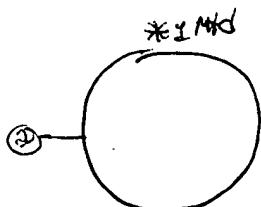
Claims 4, lines 6-7, "... RENE' NS and Nb..." (Trademark Cite)

Claim 6, lines 16-17, "... HASTELLOY X, INCO #23..." (Trademark Cite)

Claim 32, lines 15, 16, 21-22 "... SC 180, RENE' NS ... MAR-M#7..." (TRADEMARK CITE)

Allowable Subject Matter:

Claims 32 and 33 are allowed



103 Rej:  
Claims 4-31

*Search History*

=> d-18 1-4 abs,bib

STN

(HEAPAT, JPAT, USPATALL, INPATPC, INSPEC)

3/13/2006

L8 ANSWER 1 OF 4 USPATFULL on STN

AB Methods for repair of **single crystal superalloys** by laser welding and products thereof have been disclosed. The laser welding process may be hand held or automated. Laser types include: CO<sub>2</sub>, Nd:YAG, diode and fiber lasers. Parameters for operating the laser process are disclosed. Filler materials, which may be either wire or powder **superalloys** are used to weld at least one portion of a **single crystal superalloy** substrate.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AN 2005:141214 USPATFULL

TI Methods for repair of **single crystal superalloys** by laser welding and products thereof

IN Hu, Yiping, Greer, SC, UNITED STATES

Hehmann, William F., Greer, SC, UNITED STATES

Madhava, Murali, Gilbert, AZ, UNITED STATES

PI US 2005120941 A1 20050609

AI US 2003-728543 A1 20031204 (10)

DT Utility

FS APPLICATION

LREP Honeywell International Inc., 101 Columbia Rd., P. O. Box 2245, Morristown, NJ, 07962-9806, US

CLMN Number of Claims: 33

ECL Exemplary Claim: 1

DRWN 3 Drawing Page(s)

LN.CNT 578

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L8 ANSWER 2 OF 4 USPATFULL on STN

AB A thermally diluted exothermic reactor system is comprised of numerous orifices distributed within a combustor by distributed perforated contactor tubes or ducts. The perforated contactors deliver and mix diluent fluid and one or more reactant fluids with an oxidant fluid. Numerous micro-jets about the perforated tubes deliver, mix and control the composition of reactant fluid, oxidant fluid and diluent fluid. The reactor controls one or more of composition profiles, composition ratio profiles and temperature profiles in one or more of the axial direction and one or two transverse directions, reduces temperature gradients and improves power, efficiency and emissions.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AN 2004:279779 USPATFULL

TI Trifluid reactor

IN Hagen, David L., Goshen, IN, UNITED STATES

Ginter, Gary, Chicago, IL, UNITED STATES

Goheen, Bill, Goshen, IN, UNITED STATES

McGuire, Allan, Elkhart, IN, UNITED STATES

Rankin, Janet, Shawano, WI, UNITED STATES

PI US 2004219079 A1 20041104

AI US 2004-763047 A1 20040122 (10)

PRAI US 2003-442096P 20030122 (60)

US 2003-442844P 20030124 (60)

DT Utility

FS APPLICATION

LREP KNOBBE MARTENS OLSON & BEAR LLP, 2040 MAIN STREET, FOURTEENTH FLOOR, IRVINE, CA, 92614

CLMN Number of Claims: 84

ECL Exemplary Claim: 1

DRWN 31 Drawing Page(s)

LN.CNT 11328

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L8 ANSWER 3 OF 4 USPATFULL on STN

AB In a method of making a load-bearing article by spray casting a molten metal onto a metal substrate, the substrate surface receiving the spray

cast deposit is treated by vacuum cleaning, boronizing and/or knurling to enhance the structural integrity of the diffusion bond joint subsequently formed between the spray cast deposit and the substrate in sustaining a load across the joint without premature joint failure.

AN 94:48406 USPATFULL  
TI Method of enhancing bond joint structural integrity of spray cast article  
IN Stinson, Jonathan S., Plymouth, MN, United States  
Bowen, Kim E., Whitehall, MI, United States  
PA Howmet Corporation, Greenwich, CT, United States (U.S. corporation)  
PI US 5318217 19940607  
AI US 1991-794320 19911114 (7)  
RLI Continuation of Ser. No. US 1989-452958, filed on 19 Dec 1989, now abandoned  
DT Utility  
FS Granted  
EXNAM Primary Examiner: Nelson, Peter A.  
LREP Flynn, Thiel, Boutell & Tanis  
CLMN Number of Claims: 37  
ECL Exemplary Claim: 1  
DRWN 9 Drawing Figure(s); 4 Drawing Page(s)  
LN.CNT 1283

L8 ANSWER 4 OF 4 USPATFULL on STN

AB The invention consists of a method of producing a fine equiaxed grain structure (ASTM 2-4) in cast nickel-base **superalloys** which increases low cycle fatigue lives without detrimental effects on stress rupture properties to temperatures as high as 1800° F. These **superalloys** are variations of the basic nickel-chromium matrix, hardened by gamma prime [Ni<sub>3</sub>(Al, Ti)] but with optional additions of cobalt, tungsten, molybdenum, vanadium, columbium, tantalum, boron, zirconium, carbon and hafnium. The invention grain refines these alloys to ASTM 2 to 4 increasing low cycle fatigue life by a factor of 2 to 5 (i.e. life of 700 hours would be increased to 1400 to 3500 hours for a given stress) as a result of the addition of 0.01% to 0.2% of a member of the group consisting of boron, zirconium and mixtures thereof to aid heterogeneous nucleation. The alloy is vacuum melted and heated to 250°-400° F. above the melting temperature, cooled to partial solidification, thus resulting in said heterogeneous nucleation and fine grains, then reheated and cast at about 50°-100° F. of superheat. Additions of 0.1% boron and 0.1% zirconium (optional) are the preferred nucleating agents.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AN 78:13981 USPATFULL  
TI Method of improving fatigue life of cast nickel based **superalloys** and composition  
IN Denzine, Allen F., Chardon, OH, United States  
Kolakowski, Thomas A., Cleveland, OH, United States  
Wallace, John F., Shaker Heights, OH, United States  
PA University Patents, Inc., Stamford, CT, United States (U.S. corporation)  
PI US 4078951 19780314  
AI US 1976-672350 19760331 (5)  
DT Utility  
FS Granted  
EXNAM Primary Examiner: Dean, R.  
LREP Fay & Sharpe  
CLMN Number of Claims: 16  
ECL Exemplary Claim: 13  
DRWN No Drawings  
LN.CNT 1320  
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

=> d his

FILE 'HCAPLUS, INSPEC, JAPIO, USPATFULL, USPAT2, INPADOC' ENTERED AT  
09:35:14 ON 13 MAR 2006

L1 544003 S (SINGLE OR MONO) (10A) (CRYSTAL?)  
L2 34095 S (SUPERALLOY#)  
L3 663364 S (HIGH? (4A) POWER# OR HIGH?) (8A) (ENERG?)  
L4 7038 S (PREHEAT?) (8A) (MELT# OR LIQUID#)  
L5 3406730 S (SOLID#)  
L6 494583 S (FILLER#)  
L7 1 S L1 AND L2 AND L3 AND L4 AND L5 AND L6  
L8 4 S L1 AND L2 AND L3 AND L4

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=> d his

## Search History

(FILE 'HOME' ENTERED AT 09:34:38 ON 13 MAR 2006)

FILE 'HCAPLUS, INSPEC, JAPIO, USPATFULL, USPAT2, INPADOC' ENTERED AT  
09:35:14 ON 13 MAR 2006

L1 544003 S (SINGLE OR MONO) (10A) (CRYSTAL?)  
L2 34095 S (SUPERALLOY#)  
L3 663364 S (HIGH? (4A) POWER# OR HIGH?) (8A) (ENERG?)  
L4 7038 S (PREHEAT?) (8A) (MELT# OR LIQUID#)  
L5 3406730 S (SOLID#)  
L6 494583 S (FILLER#)

=> s 11 and 12 and 13 and 14 and 15 and 16  
L7 1 L1 AND L2 AND L3 AND L4 AND L5 AND L6

=> d 17 abs,bib

L7 ANSWER 1 OF 1 USPATFULL on STN

AB Methods for repair of **single crystal superalloys** by laser welding and products thereof have been disclosed. The laser welding process may be hand held or automated. Laser types include: CO.<sub>2</sub>, Nd:YAG, diode and fiber lasers. Parameters for operating the laser process are disclosed. Filler materials, which may be either wire or powder **superalloys** are used to weld at least one portion of a **single crystal superalloy** substrate.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AN 2005:141214 USPATFULL

TI Methods for repair of **single crystal superalloys** by laser welding and products thereof

IN Hu, Yiping, Greer, SC, UNITED STATES  
Hehmann, William F., Greer, SC, UNITED STATES  
Madhava, Murali, Gilbert, AZ, UNITED STATES

PI US 2005120941 A1 20050609

AI US 2003-728543 A1 20031204 (10)

DT Utility

FS APPLICATION

LREP Honeywell International Inc., 101 Columbia Rd., P. O. Box 2245,  
Morristown, NJ, 07962-9806, US

CLMN Number of Claims: 33

ECL Exemplary Claim: 1

DRWN 3 Drawing Page(s)

LN.CNT 578

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

Day : Monday  
 Date: 3/13/2006

Time: 09:41:29

**PALM INTRANET****Inventor Name Search Result**

Your Search was:

Last Name = HU

First Name = YIPING

Application#	Patent#	Status	Date Filed	Title	Inventor Name
<a href="#"><u>10665028</u></a>	Not Issued	41	09/16/2003	Coaxial nozzle design for laser cladding/welding process	HU, YIPING
<a href="#"><u>10728543</u></a>	Not Issued	30 <i>Applicant Inventor</i>	12/04/2003	Methods for repair of single crystal superalloys by laser welding and products thereof	HU, YIPING
<a href="#"><u>10746388</u></a>	Not Issued	60	12/24/2003	High-strength superalloy joining method for repairing turbine blades	HU, YIPING
<a href="#"><u>10792003</u></a>	Not Issued	71	03/02/2004	Modified MCrAlY coatings on turbine blade tips with improved durability	HU, YIPING
<a href="#"><u>10794207</u></a>	6972390	150	03/04/2004	MULTI-LASER BEAM WELDING HIGH STRENGTH SUPERALLOYS	HU, YIPING
<a href="#"><u>10806727</u></a>	6905728	150	03/22/2004	COLD GAS-DYNAMIC SPRAY REPAIR ON GAS TURBINE ENGINE COMPONENTS	HU, YIPING
<a href="#"><u>10819816</u></a>	Not Issued	71	04/06/2004	Cold gas-dynamic spraying of wear resistant alloys on turbine blades	HU, YIPING
<a href="#"><u>10930506</u></a>	Not Issued	71	08/30/2004	Method for repairing titanium alloy components	HU, YIPING
<a href="#"><u>10936925</u></a>	Not Issued	61	09/08/2004	Methods for applying abrasive and environment-resistant coatings onto turbine components	HU, YIPING
<a href="#"><u>11013218</u></a>	Not Issued	71	12/14/2004	Method for applying environmental-resistant MCrAlY coatings on gas turbine components	HU, YIPING
<a href="#"><u>11093334</u></a>	Not Issued	30	03/29/2005	Environment-resistant platinum aluminide coatings, and methods of applying the same onto turbine	HU, YIPING

				components	
<u>11093350</u>	Not Issued	30	03/29/2005	Repair nickel-based superalloy and methods for refurbishment of gas turbine components	HU, YIPING
<u>11093583</u>	Not Issued	30	03/29/2005	Nickel-based superalloy and methods for repairing gas turbine components	HU, YIPING
<u>11238383</u>	Not Issued	30	09/28/2005	Method for repairing die cast dies	HU, YIPING
<u>11280106</u>	Not Issued	25	11/15/2005	Method for repairing gas turbine engine compressor components	HU, YIPING
<u>11336305</u>	Not Issued	20	01/18/2006	Activated diffusion brazing alloys and repair process	HU, YIPING
<u>60376265</u>	Not Issued	159	04/30/2002	Nickel-base superalloy powders	HU, YIPING
<u>10049994</u>	Not Issued	161	02/18/2002	Gene cloning	HUANG, YIPING
<u>10794929</u>	Not Issued	30	03/05/2004	Gene cloning	HUANG, YIPING
<u>60149759</u>	Not Issued	159	08/19/1999	NOVEL CELL CULTURES FOR DRUG DISCOVERY AND SCREENING	HUANG, YIPING
<u>60149788</u>	Not Issued	159	08/19/1999	PRIMERS AND PROBES FOR GENE DISCOVERY AND CLONING	HUANG, YIPING

Inventor Search Completed: No Records to Display.

<b>Search Another: Inventor</b>	<b>Last Name</b>	<b>First Name</b>
	<input type="text" value="Hu"/>	<input type="text" value="Yiping"/> <input type="button" value="Search"/>

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Day : Monday  
Date: 3/13/2006

Time: 09:41:56

**PALM INTRANET****Inventor Name Search Result**

Your Search was:

Last Name = HEHMANN

First Name = WILLIAM

Application#	Patent#	Status	Date Filed	Title	Inventor Name
<a href="#"><u>10632451</u></a>	Not Issued	164	07/31/2003	3-D ADAPTIVE LASER POWDER FUSION WELDING	HEHMANN, WILLIAM
<a href="#"><u>10071025</u></a>	6593540	150	02/08/2002	HAND HELD POWDER-FED LASER FUSION WELDING TORCH	HEHMANN, WILLIAM F.
<a href="#"><u>10190150</u></a>	6968991	150	07/03/2002	DIFFUSION BOND MIXTURE FOR HEALING SINGLE CRYSTAL ALLOYS	HEHMANN, WILLIAM F.
<a href="#"><u>10206411</u></a>	6894247	150	07/26/2002	POWDER FEED SPLITTER FOR HAND-HELD LASER POWDER FUSION WELDING TORCH	HEHMANN, WILLIAM F.
<a href="#"><u>10460008</u></a>	6774338	150	06/12/2003	HAND HELD POWDER-FED LASER FUSION WELDING TORCH	HEHMANN, WILLIAM F.
<a href="#"><u>10713759</u></a>	Not Issued	95	11/13/2003	HAND-HELD LASER WELDING WAND FILLER MEDIA DELIVERY SYSTEMS AND METHODS	HEHMANN, WILLIAM F.
<a href="#"><u>10721632</u></a>	7012216	150	11/24/2003	HAND-HELD LASER WELDING WAND HAVING INTERNAL COOLANT AND GAS DELIVERY CONDUITS	HEHMANN, WILLIAM F.
<a href="#"><u>*10728543</u></a>	Not Issued	30 <i>Applicant's invention</i>	12/04/2003	Methods for repair of single crystal superalloys by laser welding and products thereof	HEHMANN, WILLIAM F.
<a href="#"><u>10789854</u></a>	Not Issued	30	02/26/2004	Hand held powder-fed laser fusion welding torch	HEHMANN, WILLIAM F.
<a href="#"><u>10792003</u></a>	Not Issued	71	03/02/2004	Modified MC/AlY coatings on turbine blade tips with improved durability	HEHMANN, WILLIAM F.
<a href="#"><u>10794207</u></a>	6972390	150	03/04/2004	MULTI-LASER BEAM	HEHMANN,

				WELDING HIGH STRENGTH SUPERALLOYS	WILLIAM F.
<a href="#"><u>10929071</u></a>	Not Issued	30	08/27/2004	Repair of turbines on wing	HEHMANN, WILLIAM F.
<a href="#"><u>10936925</u></a>	Not Issued	61	09/08/2004	Methods for applying abrasive and environment-resistant coatings onto turbine components	HEHMANN, WILLIAM F.
<a href="#"><u>11055924</u></a>	Not Issued	20	02/11/2005	Mobile hand-held laser welding support system	HEHMANN, WILLIAM F.
<a href="#"><u>11238383</u></a>	Not Issued	30	09/28/2005	Method for repairing die cast dies	HEHMANN, WILLIAM F.
<a href="#"><u>11280106</u></a>	Not Issued	25	11/15/2005	Method for repairing gas turbine engine compressor components	HEHMANN, WILLIAM F.

Inventor Search Completed: No Records to Display.

<b>Search Another: Inventor</b>	<b>Last Name</b>	<b>First Name</b>
	<input type="text" value="Hehmann"/>	<input type="text" value="William"/>
	<input type="button" value="Search"/>	

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Day : Monday  
 Date: 3/13/2006

Time: 09:42:11


**PALM INTRANET**
**Inventor Name Search Result**

Your Search was:

Last Name = MADHAVA

First Name = MURALI

Application#	Patent#	Status	Date Filed	Title	Inventor Name
<a href="#"><u>10728543</u></a>	Not Issued	30	12/04/2003 <i>Applicants Invention</i>	Methods for repair of single crystal superalloys by laser welding and products thereof	MADHAVA, MURALI
<a href="#"><u>10806727</u></a>	6905728	150	03/22/2004	COLD GAS-DYNAMIC SPRAY REPAIR ON GAS TURBINE ENGINE COMPONENTS	MADHAVA, MURALI
<a href="#"><u>10819816</u></a>	Not Issued	71	04/06/2004	Cold gas-dynamic spraying of wear resistant alloys on turbine blades	MADHAVA, MURALI
<a href="#"><u>10836791</u></a>	Not Issued	30	04/30/2004	Chromium diffusion coatings	MADHAVA, MURALI
<a href="#"><u>10854985</u></a>	Not Issued	30	05/26/2004	Active elements modified chromium diffusion patch coating	MADHAVA, MURALI
<a href="#"><u>10928545</u></a>	Not Issued	71	08/26/2004	Chromium and active elements modified platinum aluminide coatings	MADHAVA, MURALI
<a href="#"><u>60376265</u></a>	Not Issued	159	04/30/2002	Nickel-base superalloy powders	MADHAVA, MURALI
<a href="#"><u>09996533</u></a>	6645926	150	11/28/2001	FLUORIDE CLEANING MASKING SYSTEM	MADHAVA, MURALI N.
<a href="#"><u>10976749</u></a>	Not Issued	61	10/29/2004	Aluminum articles with wear-resistant coatings and methods for applying the coatings onto the articles	MADHAVA, MURALI N.
<a href="#"><u>11013218</u></a>	Not Issued	71	12/14/2004	Method for applying environmental-resistant MCRAIY coatings on gas turbine components	MADHAVA, MURALI N.
<a href="#"><u>11027152</u></a>	Not Issued	30	12/29/2004	Low cost innovative diffused MCRAIY coatings	MADHAVA, MURALI N.
<a href="#"><u>11044873</u></a>	Not	30	01/26/2005	High strength amorphous and	MADHAVA,

	Issued			microcrystalline structures and coatings	MURALI N.
11093334	Not Issued	30	03/29/2005	Environment-resistant platinum aluminide coatings, and methods of applying the same onto turbine components	MADHAVA, MURALI N.
11114470	Not Issued	20	04/25/2005	Magnesium repair and build up	MADHAVA, MURALI N.

Inventor Search Completed: No Records to Display.

**Search Another: Inventor**

Last Name	First Name
<input type="text" value="Madhava"/>	<input type="text" value="Murali"/>
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